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AUTHOR Goolsby, Thomas M., Jr.
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ABSTRACT

Materials and methods of instruction, adequacy of facilities, teacher quality, and motivation are influential factors in the quality of learning. Language and verbal ability are functions determining achievement in all subject areas. A reading and social science curriculum was designed from this perspective, using a previously-developed listening curriculum as a model. The child is introduced to the reading and social science curriculum at the level where his individual progress has been assessed. Short reading passages concerned with the site, route, and boundary components of a functional community, are followed by multiple choice questions. This technique is considered important because it encourages student independence and self direction, facilitates the acquisition of social science knowledge and the understanding of reading skills, and provides not only a source of immediate feedback but an evaluation method also. The intent is to use the materials for training in language develcpment of reading skills. The procedures to validate the curriculum materials and ascertain their effectiveness in developing reading skills and improving achievement levels are described in detail, including the study sample, the measurement instruments, the data-gathering process itself, and the statistical analysis. (TA)

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VALIDATION AND USE OF "PRIMARY LEVEL SELF-ADMINISTERED SEQUENTIAL READING AND SOCIAL SCIENCE CURRICULUM" FOR THE DISADVANTAGED STUDENT

Thomas M. Goolsby, Jr.
University of Georgia

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Since the founding of public education in the United States, there have been recognized regional, socioeconomic, ability level and other differences in quality of learning or school progress. The primary indicator of learning or school progress has been achievement tests. Extensive achievement test batteries such as the Iowa Tests of Basic Skills (ITBS), the Metropolitan Achievement Tests (MAT), and the Stanford Achievement Tests (SAT) are among the best criteria of success or progress in grades one through nine. For the general population, total scores on the three batteries will correlate with commonly used measures of intelligence or ability to as much as .85. Each battery is designed to be more appropriate for one population (school system, state, region, etc.) or curriculum than for another. However, total scores on any two of the batteries will correlate to as much as a zero order relationship of .95. Similarly named subtests from one battery to another will correlate on the average of .55, indicating internal differences of appropriateness to certain curriculums. Correlation coefficients of the magnitudes alluded to above can be consistently obtained and are important. The relationships between subtests from

one battery to another are particularly noteworthy since they are statistical evidence indicating that responsible school personnel need to analyze the curriculum by subject areas, consider future goals and innovations, and administer various subtests of various batteries to appropriate instructional personnel when selecting an achievement test battery to fit a given curriculum (Goolsby, 1970). Statistical procedures employing measures of central tendency are more commonly used than correlational methods to determine quality and level of performance.

The quality and level of performance in learning is determined by important factors such as teacher quality, methods and materials of instruction, adequacy of facilities, and motivation. These and other factors enter into the scores on achievement tests determining quality and level of learning of those in different locales, socio-economic levels, ability levels, and so forth. A fuller treatment will not be made of the complex classroom functioning of factors influencing learning since many researchers and most psychologists are familiar enough with them to comprehend and evaluate what will follow.

Probably the most immediately manipulative of the factors influencing learning are materials, methods, and facilities, and to some extent teacher quality and motivation. These factors will be central to the present proposal.

Language and verbal ability are highly generalizable functions determining achievement in all subject areas. It has been widely

recognized that children entering school with adequate readiness as measured by readiness tests (language and numbers) and acquire subsequent basic skills progress best throughout school. Lack of or low readiness to enter school and to acquire basic skills has been generally associated with depressed areas, the socioeconomically disadvantaged, and/or low ability. Depressed areas and disadvantaged youth are where immediate ameliorative action is needed.

Goolsby (1968) has shown that head start subjects trained to listen for details, purposes, organizations, and evaluations followed by structured multiple choice test questioning progressed substantially toward readiness as measured by the Metropolitan Readiness Test (MRT) over an eight week period. The materials used were in A Curriculum in Listening Achievement (Goolsby, 1969). A general population of subjects did not show the same kind of progress. On the basis of this evidence and subsequent informal evidence at preprimary and primary levels where the type of procedure used with the listening curriculum and with students reading the passages were employed, an intensive effort has been made to develop social science materials using the listening curriculum as a model.

This reading and social science curriculum has been designed with special features and employs significant psychological principles.

The curriculum begins at a point when most children are expected to start reading the printed page. If a child cannot read the printed page, the curriculum provides supplementary listening passages and other readiness training and assessment. The child begins with the

materials and procedures of the curriculum at the level where his individual progress has been assessed. These features plus the structure of the materials and certain psychological orientations give most children an optimal opportunity to learn the skills of reading at a time appropriate for effective utilization in later learning.

The general structure of the material is short passages followed by four response multiple choice questions. Short passages followed by questions is important for several reasons. First, the student is able to be more independent and self-directing since there are scorable questions relating directly to each passage. The structured questions for each passage immediately direct the students' attention to the important outcomes of acquiring social science knowledges, skills, and understanding and acquiring the skills of reading. The skills of reading are determining details, purposes, organizations, and evaluations from reading the passages. The student and teacher together can use the score on each set of questions for each passage to determine progress and make a decision whether to proceed to the next passage.

The skills are sequenced as to complexity so that less complex skills are developed first. The less difficult items for each passage are also presented first so that the student does not become discouraged. Also, easy items are strategically placed at frequent intervals. This design encourages response to all the items.

The student and/or the teacher is able to score the questions for a given passage as soon as the student finishes. This allows the student to receive immediate reinforcement (immediate feedback).

The intent is to use the materials to train culturally disadvantaged students in grades two, three, and four in language development of reading skills as represented by the following outline in ITBS:

D (Details): To recognize and understand stated or implied factual details and relationships.

D-1: To recognize and understand important facts and details.

D-2: To recognize and understand implied facts and relationships.

D-3: To deduce the meaning of words or phrases from context.

P (Purpose): To develop skill in discerning the purpose or main idea of a paragraph or selection.

P-1: To detect the main purpose of a paragraph or selection.

P-2: To recognize the main idea or topic of a paragraph or selection.

O (Organization): To develop ability to organize ideas.

O-1: To recognize common elements of parallel topics in incidents or paragraphs.

O-2: To recognize proper time sequence.

E (Evaluation): To develop skill in evaluating what is read.

E-1: To develop generalization from a selection.

E-2: To recognize the writer's viewpoint, attitude, or intention.

E-3: To recognize the mood or tone of a selection.

E-4: To recognize outstanding qualities of style or structure.

Pre-reading activities as outlined in Evaluation of Cognitive Development--Pre-reading Skills (Goolsby, 1969) and materials like A Curriculum in Listening Achievement (Goolsby, 1969) have been designed to be used in bringing non-readers to "reading threshold."

All of the materials developed for use in this study are designed to be used with no significant changes in classroom procedures or curriculum. Therefore, very little additional instruction time will be usurped.

It shall be the purpose of this study to validate the materials developed. More specifically, it shall be the purpose to determine:

1. The effectiveness of the social science materials to develop the skills of reading as outlined in the ITBS and measured by commonly used achievement test batteries.
2. The effectiveness of the materials to significantly improve progress in other areas of achievement--vocabulary, language, arts, work-study, arithmetic, science, social science, and general reading--as measured by commonly used achievement tests batteries.

Procedures

Five third grade classes of approximately thirty per class of experimental subjects (ES) will be identified so that (1) approximately two-thirds of the individuals measure not greater than a grade equivalent of 2.0 on the reading subtests of the ITBS and the MAT and (2) no individual will score more than a grade equivalent of 3.5 on the same tests. After an extensive effort to determine what is meant by culturally disadvantaged or deprived, the contention is that the culturally disadvantaged will be those subjects "one grade below grade level on a reading subtest of an extensive achievement battery at third grade." This definition will probably change at higher grade levels, i.e. "two grades below grade level ... at sixth grade." This will be checked before proceeding to administer the Hollingshead Two Factor Index of Social Position. Any subjects in Categories IV and V on this scale will be classified as culturally deprived.

Five third grade classes of approximately thirty per class of comparison subjects (CS) will be identified by the same procedures as those followed for the selection of the ES classes.

Five third grade classes of approximately thirty per class of general population subjects (GP) will be selected so that each class distribution of scores is approximately normal, with means and standard deviations not significantly different from those reported for the reading subtest of ITBS and MAT for the norming sample.

Two to five classes of approximately twenty per class will be identified to briefly look at the important question of reduced class size (RS) while using the experimental materials and methods compatible with established classroom time allotments for various activities. These will be selected by the same procedures as the ES and CS classes.

A single school system will be used in this initial study to validate the materials to avoid many of the complicating influences that enter when different populations are used.

The following measures will be administered to all groups:

1. Achievement Data

   a. ITBS: Form 3--Tests V, R, L, W, and A (September 1970 for identification, selection and progress)
   Form 1--Test R (December 1971 for progress score)
   Form 2--Test R (March 1971 for progress score)
   Form 4--Test V, R, L, W, and A (May 1971 for progress score)

   b. MAT: Form A (September 1970 for identification, selection, and progress)
   Form B (May 1971 for progress score)

   c. Botel Reading Inventory: Form A (September 1970 for status score)
   Form B (May 1971 for progress score)

2. Socioeconomic Status

   Hollingshead Two Factor Index (September 1970 for status scores)

3. Mental Ability

   Otis Lennon Mental Ability Test (September 1970 for status score)

4. Pre-reading Inventory

   Evaluation of Cognitive Development--Pre-Reading Skills (as needed for non-readers as presently described).

The students in the ES and RS groups will receive fifty minutes of instruction daily using the specially prepared social studies material according to A Curriculum in Listening Achievement (1969) as a model. The following passage and questions is a sample of the social studies material prepared for this study.

Jerry and Mr. Smith were sitting in City Park. The valley and river were in front of them. Across the valley they saw the heavy trucks. They were moving slowly on the highway. The highway was steep and had many curves. It led from the valley bottom to the ridge top.	"That hill over there is known as Stagecoach Hill," said Mr. Smith. "A long time ago the stagecoach trail between our town and Highland followed that part of the hill. Extra horses were needed to make the pull when the stagecoach was going up the hill. When coming down the driver went

very slowly so that there wouldn't be a runaway. Horses are no longer used. The trucks have replaced the stagecoaches. But the name of the hill has remained the same. Everyone still calls it Stagecoach Hill."

1. What is the best title for this paragraph?
   1) In Old Days
   2) In the Park
   3) The Valley
   4) Stagecoach Hill

2. What did Jerry and Mr. Smith not see across the valley?
   1) A stagecoach
   2) A highway
   3) A hill
   4) A ridge top

3. Where did the highway across Stagecoach Hill lead?
   1) To our town
   2) To Highville
   3) To Highland
   4) To the city

4. Why were extra horses needed to pull the stagecoach up the hill?
   1) The hill was steep.
   2) The hill was muddy.
   3) The stagecoach was very heavy.
   4) The horses were small.

5. Why did the driver go slowly down the hill?
   1) To rest the horses
   2) To make it easy on the riders
   3) To keep from having a runaway
   4) To stop for water

6. What did Jerry and Mr. Smith see between them and Stagecoach Hill?
   1) Heavy trucks
   2) The river
   3) Curves
   4) Trees

7. What was true about a trail up a steep hill for a stagecoach to travel?
   1) It was easy to travel.
   2) It was wide.
   3) It was fast.
   4) It had many curves.

8. What happened to the stagecoach trail?
   1) It was not used.
   2) It was replaced by a highway.
   3) It was not used very often.
   4) It was replaced by a railroad.

The following is the social science material content outline:

Sequence Outline

Book A:

I. Site components - 40 - 50 passages

II. Route components - 25 - 30 passages

III. Boundary components - 15 - 20 passages

Book B:

Interdependence of components - 50 - 60 passages

Book C:

I. Economic aspects of components - 30 - 40 passages

II. Political aspects of components - 30 - 40 passages

III. Social aspects of components - 30 - 40 passages

Book D:

Environmental quality of community - 50 - 60 passages

Book E:

Comparison of communities in different parts of the world

50 - 60 passages

The basic organizer throughout this sequence is the functional community. A functional community includes those geographic, social, political, and economic components which produce a viable setting for all human interactions.

Site, route, and boundary components are concepts which provide the foundation for the functional community. Sites are places which become referents in the learner's increasingly complex world. The home is one of the first sites a learner becomes aware of during the developmental process. Gradually other sites, for example the school,

grocery store, and park become reference points. During this period routes take on significance. They become the linkages between the home and the expanding site perspectives of the learner. Routes become associated with trips, such as trips to the store, trips to school, trips to work, and eventually result in time/distance considerations by the learner. Boundaries provide the areal limits around which decisions are made. To relate the principles of boundaries and barriers as they pertain to humans is a primary objective. Property, county, state and international boundaries represent a few which the student comes in contact with as the magnitude of sites and routes increases.

The site, route and boundary materials are designed, on the one hand, to complement experiences which disadvantaged learners may have had, but have not related to a conceptual geographic framework. On the other hand, learners are provided with written experiences designed to vicariously expand their perception of life space.

The interdependence of territorial (site, route, and boundary) components readily permits the integration of the three. Having been introduced to the existence of sites, routes and boundaries, the learner reads about the interaction of the three as man has used them at various periods in time. The learner will study an early Hopi community, an early community in the United States, and a contemporary American community. The focus will be on people using sites, routes, and boundaries and the temporal changes which occur in use modes.

The economic, political, and social aspects of the community are related closely to the territorial components. Sites with particular economic functions, such as a bank, steel mill, or lumber yard are important components of certain communities. The interaction of those sites and others along routes and across boundaries/barriers is an example of economic interdependence. The political function of sites, for example the courthouse, state capital, and national capital, is highly dependent upon boundary decisions and route linkages. They will be represented as jurisdictional institutions which are nodal points closely linked to subordinate communities and sites. The social aspects of the components are related by such things as hospitals, parks, and population density. Various community situations will be presented to reflect social problems directly associated with displacement of people in favor of airports and expressway routes, to name only two.

The quality of community life is highly dependent upon the environment. A major segment of the man-made environment consists of sites, routes and boundaries. Situations of dire consequence regarding air, water, and noise pollution will be elaborated upon. Alternatives to the examples of successful solutions to the problem of recreating a healthy environment is the objective of this segment of the social science sequence.

The comparison of communities in different parts of the world is cross-cultural in design. Since the learner has essentially studied the American community up to this point, approximately five contemporary foreign communities will be presented. They will represent East Africa,

the Middle East, Southeast Asia, Russia, and Western Europe. Comparison of the territorial appearance and functioning of those communities will be made with each other and with the United States.

The sequence design is such that the learner is initially provided with a conceptual geographic framework. That framework (sites, routes, and boundaries) is consistent throughout the sequence and produces an integrating effect. The learner's evaluation of the components as situations vary and circumstances change will encourage the assessment of additional factors which operate in local communities, but extend also to a national and international setting.

The material represented by the outline will last for nine months at fifty minutes per school day. See Appendix A for the first printing of Book A (site and route components only) prepared for experimental tryout.

Materials developed appropriate for grades five, six, and seven will provide materials for those in the experimental groups reading at greater than the fourth grade level.

Students found to be "non-readers" will be immediately given the protocol, Evaluation of Cognitive Development-Pre-Reading Skills, and listening exercises followed by orally presented structured four response multiple choice test items. These subjects will be retested on a reading achievement subtest when they have checks for seventy percent of the items in the protocol and are responding to eighty or more percent of the listening passage items.

They will be placed at the appropriate level of the social science reading material when they reach a grade equivalent of 2.0 on the reading test. Otherwise they will continue a combination of listening, pre-reading skills and reading.

During the first month of instruction, subjects in the ES and RS groups will be expected to respond correctly to at least 70 percent of items following passages. Thereafter they will be expected to respond correctly to at least 80 percent of items following passages. This should allow for an initial familiarity or "warm-up" with the materials.

Should these criteria not be met, supplementary passages and exercises will be used which have been designed for students between the 3.0 and 2.5 grade equivalent level. Supplementary material will also be available for those scoring at approximately the 3.5 grade equivalent level in September. There should be adequate reading materials so that supplementation will not be necessary at any other levels.

A teacher's manual will be furnished with the material which will include scoring key for the items after each passage. The student will use an answer sheet to mark his answers to the questions following each passage. When he has responded to the questions following a given passage, he will have it scored immediately for reinforcement and motivation purposes found to be critical to learning (Goolsby, 1968) as well as to determine whether he has met the criterion to proceed to the next passage.

The CS and GP will receive the curriculum presently employed in the school system.

To analyze the achievement data several multivariate analyses of covariance will be performed. Mental age will be the covariate and achievement scores will represent the criterion vector. The design is a complete factorial with five factors as follows:

1. Experimental condition: First Analysis--two levels (experimental and comparison); Second Analysis--two levels (experimental and general population); Third Analysis--two levels (experimental and reduced size); Fourth Analysis--two levels (general population and reduced size).
2. Socioeconomic Status: Five levels; I, II, III, IV, V (Hollingshead Two Factor Index) (All analyses).
3. Sex: Two levels; male and female. (All analyses.)

The program used for analysis will be the multivariate analysis of covariance program from Multivariate Statistical Programs by Clyde, Cramer and Sherrin (1966). This program is very flexible in that unequal numbers of cases per cell are handled with appropriate adjustments for significance levels according to the method presented by Bock (1963). Another feature of the program is a check for the significance of the F ratio associated with the sum of squares for regression of the covariate (s) on the criteria. Of course, nonsignificance of this ratio would indicate that the proposed covariate might not be appropriate for the analysis of variance model.

Other data for the following variables will be collected:

1. Sex (Male or Female)
2. Number of Siblings
3. Days absent
4. Ethnic Group (Negro, white, or other)

These variables will be analyzed and presented separately to determine their separate effects on achievement using the multivariate analysis of covariance procedures outlined earlier or descriptive statistics.

OTHER DEVELOPMENT AND RESEARCH FOR 1970-71

During 1970-71 an intensive and extensive developmental effort will be made with regard to materials and modes of presentation.

Two types of material will be prepared for non-readers and children ages two through six. First, materials following the same model as the primary social science materials and designed to prepare non-readers in pre-reading skills as measured by the Pre-Reading Protocol (Goolsby, 1969) in its revisions. Second, a Social Science Listening Curriculum for non-readers will be developed according to the structure of A Curriculum in Listening Achievement (Goolsby, 1969) and Primary Level Self-Administered Sequential Reading and Social Science Curriculum (Goolsby and Stoltman, 1970).

An Intermediate Level Self-Administered Sequential Reading and Social Studies Curriculum for grades five, six and seven using grade as the anchor grade for gathering experimental data will be developed.

A Primary Reading and Science Curriculum and a limited Primary Reading and Mathematics Curriculum will be developed according to the social science material model. The intermediate versions of these will follow the approximate temporal sequence as the social science materials.

Very limited and experimental modules will be prepared for the secondary level as Readings in the Social Sciences, Readings in the Sciences, and Readings in Mathematics. These will be fully developed by 1975.

Interpretation of cartoons, working puzzles, playing games, and work-study skills development through the use of such things as charts, graphs, and maps will be strategically placed for motivational, interest, and various other psychological purposes shown or considered to be important to learning throughout all materials.

Instructional manuals will be developed as deemed necessary and appropriate.

Revisions of all materials are expected every four to six years from the time each is released for public consumption.

Limited and experimental adaptation of the primary social science materials will be adapted to computer assisted instructional techniques. The form of the materials should lend themselves extremely well to computerized learning. Other areas and levels will be adapted to the computer as time and resources permits.

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